## s18: EXP LOG (SLTN v315)
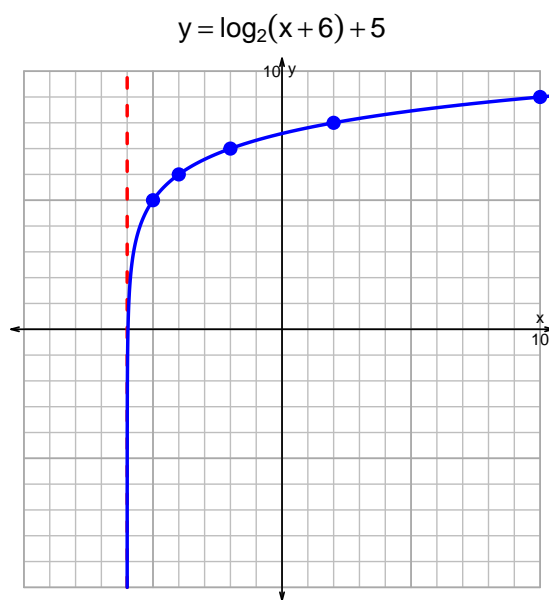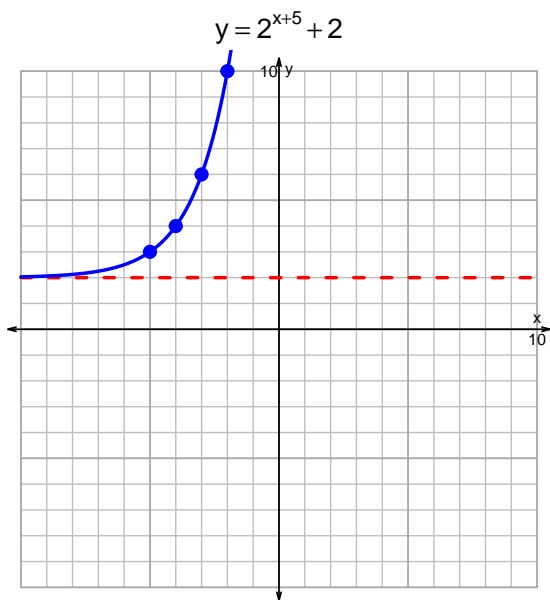
1. (10 pts) Graph $y = 2^{x+5} + 2$ and $y = \log_2(x+6) + 5$ on the grids below. Also, draw any asymptotes with dashed lines.



$$y = 2^{x+5} + 2$$



$$y = \log_2(x+6) + 5$$

*Somewhat useful hint:* $2^3 = 8$, and thus $\log_2(8) = 3$.

2. (10 pts) Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression. Please do not do any arithmetic; just move numbers around.

$$-29 = \left(\frac{-5}{7}\right) \cdot 10^{3t/4}$$

Divide both sides by $\frac{-5}{7}$.

$$\frac{29 \cdot 7}{5} = 10^{3t/4}$$

Take log, base 10, of both sides.

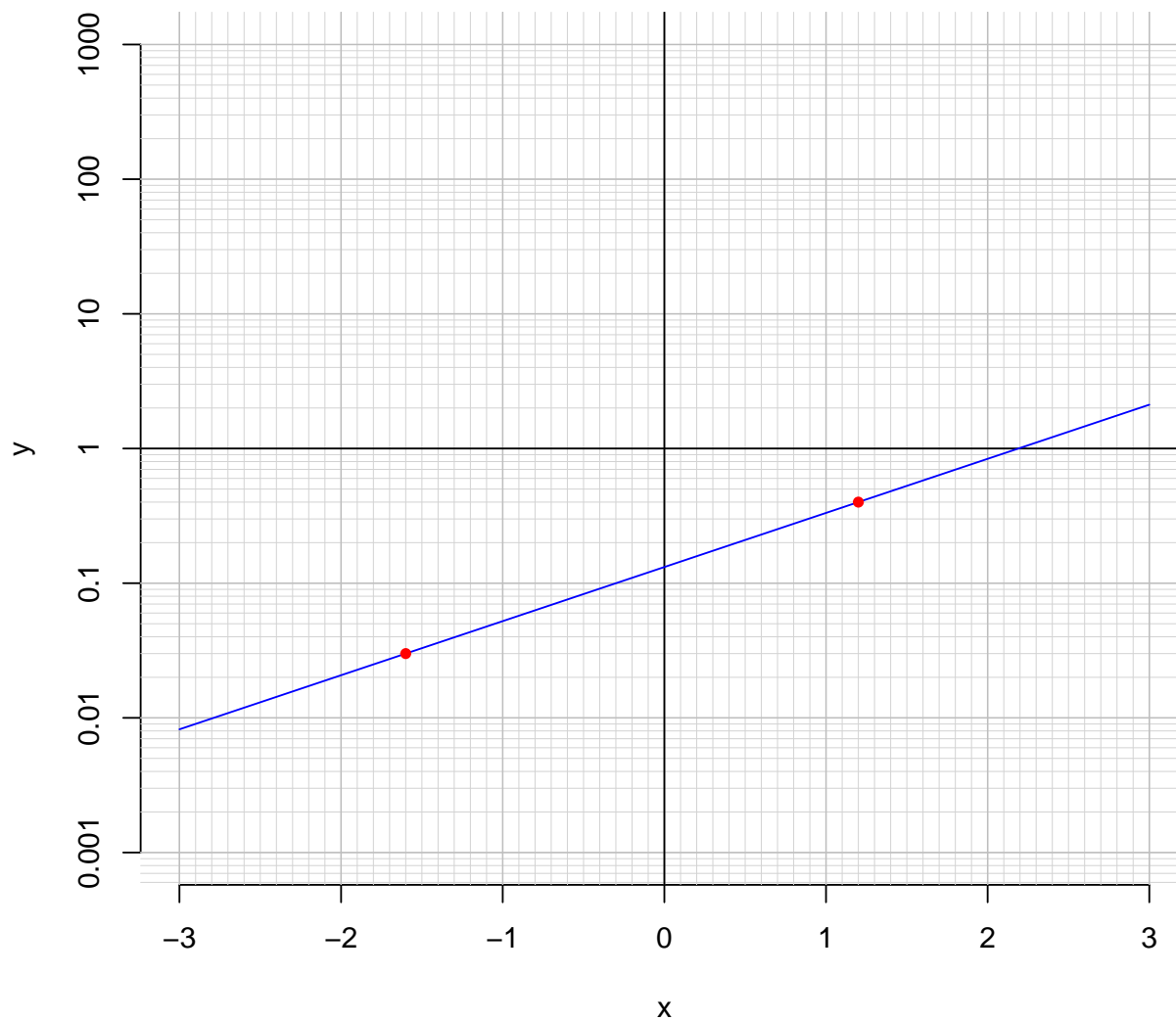$$\log_{10}\left(\frac{29 \cdot 7}{5}\right) = \frac{3t}{4}$$

Divide both sides by $\frac{3}{4}$.

$$\frac{4}{3} \cdot \log_{10}\left(\frac{29 \cdot 7}{5}\right) = t$$

Switch sides.

$$t = \frac{4}{3} \cdot \log_{10}\left(\frac{29 \cdot 7}{5}\right)$$

3. (10 pts) An exponential function $f(x) = 0.132 \cdot e^{0.925x}$ is graphed below on a semi-log plot.



a. Using the plot above, evaluate $f(1.2)$.

$$f(1.2) = 0.4$$

b. The inverse function is logarithmic.

$$f^{-1}(x) = \frac{1}{0.925} \cdot \ln\left(\frac{x}{0.132}\right)$$

Using the plot above, evaluate $f^{-1}(0.03)$.

$$f^{-1}(0.03) = -1.6$$